PlantWatchPRO

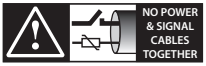
supervisor for small-medium installations

CAREL

ENG User manual

LEGGI E CONSERVA QUESTE ISTRUZIONI

READ AND SAVE THESE INSTRUCTIONS



READ CAREFULLY IN THE TEXT!

Integrated Control Solutions & Energy Savings

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This product uses semiconductors that may be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged. Damage due to inappropriate handling is not covered by warranty.

WARNING: separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance.
Never run power cables (including the electrical panel wiring) and signal cables in the same conduits.

Before performing any operations, check that the PlantWatchPRO box contains:

1. the two plastic faceplates (top and bottom);
2. the user manual;
3. the device itself;
4. four screws (already inserted in position);
5. the terminals (six, already connected to the board);
6. two resistors (inside the case).

1. PRESENTATION

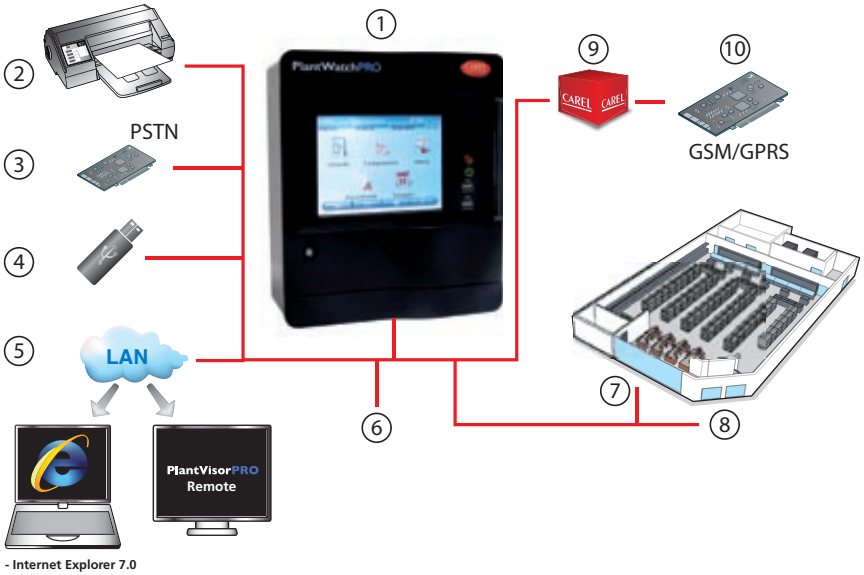
PlantWatchPRO is the new solution from CAREL for the supervision of small-medium installations.
Complete network and alarm configuration, simple navigation and an attractive design are some of the features that make PlantWatchPRO the cutting edge product in its category.
A colour LCD touchscreen, and the use of practical menus, guide the user simply and intuitively, without the use of a PC (however a PC can be connected if necessary), thus providing a practical solution for all those environments that do not have room for a computer.
Other innovative features of PlantWatchPRO include:

- possibility to connect and control up to 100 devices;
- use of the CAREL or Modbus® protocols;
- recording of around 100 variables, sampled every 15 minutes, for more than one year;
- IP65 index of protection between the frame and the front panel;
- ready for connection to the PlantVisorPRO Remote supervisor system;
- a Guardian program that boosts and improves system reliability;
- 3 output relays, for alarm signals or activating lights and defrosts;
- possibility to export data (alarms, events, system and model configurations and variable reports) using a USB memory key (the data are downloaded in a format that is compatible with Microsoft® Excel and Microsoft® Word);
- import new standard or custom devices;
- display graphs;
- proximity sensor that activates the display without the user needing to open the cover;
- external buzzer management;
- complete alarm configuration;
- phone book for SMS contacts, fax numbers, e-mail addresses;
- active defrost management;
- possibility for multiple users to access the system, with different privileges (administrator, normal user, user with privileges);
- instrument suitable for technical environments, no moving parts.

Key:

1	touch screen
2	proximity sensor
3	alarm light
4	device on light
5	USB port
6	transparent cover

General diagram of PlantWatchPRO connections



Key and product codes:

1	PlantWatchPRO
2	PostScript-enabled USB printer
3	PSTN analogue modem (version PWPROM0000 only)
4	USB memory key
5	PC (via LAN)
6	3 relay outputs
7	Installation: Modbus® RTU line
8	Installation: CAREL line
9	GSM/GPRS modem connection kit(code PWOPMD0000)
10	optional GSM/GPRS modem (code PLWOPGSM00) *required to be able to use all the SMS functions;* *using modems other than the one supplied by CAREL will not guarantee correct operation of the appliance and technical service*

2. KEY

	note	highlights an important point; in particular as regards the practical use of the various product functions
	warning	warns the user of critical areas for the use and safety of PlantWatchPRO
	USB key	indicates that the function can only be accessed directly from PlantWatchPRO (not via web) and using a USB memory key
	tutorial	offers the user some simple configuration examples of the most common settings for the supervision of an installation

3. INSTALLATION REQUIREMENTS

The following are required to install PlantWatchPRO:
- ☐ two screwdrivers, one Phillips-head and the other flat-head;
- ☐ a drill to make the holes required on the frame of PlantWatchPRO;
- ☐ screws for mounting the unit on the wall;
- ☐ step bit max. dia. 32 mm.

In addition

Before performing any operation, check that the PlantWatchPRO box contains:
- ☐ the device itself;
- ☐ the two plastic faceplates (top and bottom);
- ☐ the terminals (six, already connected to the board);
- ☐ four screws (already inserted in position)
- ☐ two resistors (inside the case);
- ☐ the user manual.

4. ASSEMBLY PROCEDURE

Assembly

To safeguard operators and the boards, disconnect power before performing any operations. Electrical damage may occur to the electronic components as a result of electrostatic discharges from the operator. Suitable precautions must be therefore be taken when handling these components.

Warning:

- *disconnect power before handling the product;*
- *avoid touching or nearly touching the electronic components fitted on the boards, so as to avoid electrostatic discharges (extremely dangerous) from the operator to the components;*
- *the materials must be kept inside their original package as long as possible.*
- *absolutely avoid non-antistatic plastic bags, polystyrene or sponges;*
- *never not pass the boards directly between operators (to prevent from electrostatic induction and discharges).*
- *using a different power supply from the one specified may seriously damage the system;*
- *connection errors (and connections other than those specified in this manual) may endanger the safety of the users and cause faults to the instruments and the components connected;*
- *Fit a cutout device outside of the appliance connected in series with the power supply: Carel requires the use of a slow-blow fuse with a rated current of 1.25 A. The cutout device must be rated to protect the product against temporary voltage surges higher than the maximum continuous voltage, thermal overload due to leakage current, fire and explosion in the event of short-circuits.*
- *Fit one or more disconnect switches outside of the appliance in an easily accessible position, to disconnect the product form the mains power supply*

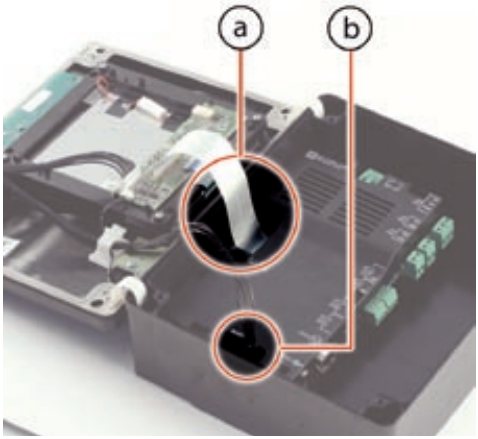
If using the PlantWatchPRO version with pre-drilled frame (code PWPROxxxxxxxx), start assembly procedure from point ❻ .

❶

Remove PlantWatchPRO from the plastic bag it is wrapped in and place it on the bench.

❷

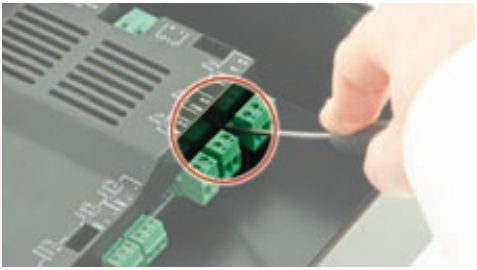
Open PlantWatchPRO from right to left (side hinged by the yellow clamps), making sure not to disconnect the ribbon cable from the display (a) and the other cable that connects to the board from the front panel (b).



4. ASSEMBLY PROCEDURE

❸

Remove the board using a flat-head screwdriver, levering the two tabs (3a and 3b) on the grill that secures it in place; then fully place the board on the front part of PlantWatchPRO (3.c).



3a

3b

3c

❹

Now drill the plastic frame of PlantWatchPRO to make the opening for the connection cables, holding it firmly by hand, as shown in the figure.

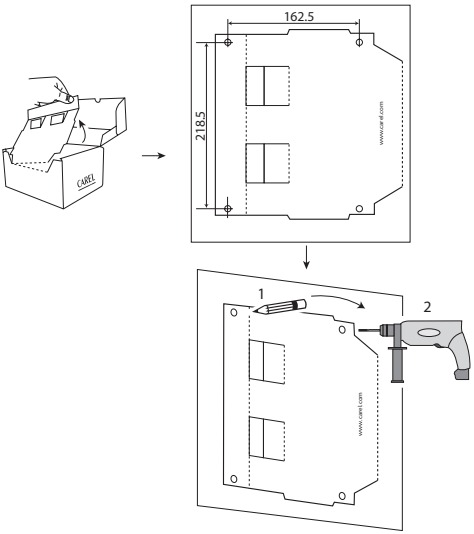
⚠ ***Warning:*** *drill PlantWatchPRO using a step bit with a maximum diameter of 32 mm.*

❺

Then place the board in position and press until the locking tabs on the grill click into place.

6

Using the drilling template (provided on the box), drill the wall where PlantWatchPRO is to be mounted, and then fasten it to the wall using four screws.



Warning: *to ensure the index of protection, the screws used to fasten PlantWatchPRO to the wall must only pass through the four existing holes in the four corners of the frame.*

7

Once PlantWatchPRO has been fastened to the wall, and the cables have been run through the holes in the frame, the wiring can be completed, as shown in chapter 5 "Board and connections".

❽

Once wiring has been completed, close PlantWatchPRO again, making sure the two tabs click into the corresponding slots.

❾

Then fasten the front to the rear using the four screws supplied.

Warning: *to ensure the IP65 index of protection, the rubber gasket must be correctly positioned between the two parts of the PlantWatchPRO frame.*

❿

Finally, fit the top and bottom plastic faceplates, by lightly pressing them into place.

Warning: *if during the assembly operations the display cable is detached from terminal JZIF1, proceed as follows to connect it again:*
- *lift the "clip-clap" tab on the terminal;*
- *connect the display cable, holding it in place with two fingers;*
- *finally lower the tab on the terminal until it clicks into place, thus securing the cable.*

5. BOARD AND CONNECTIONS

Wiring

To safeguard operators and the boards, disconnect power before performing any operations. Electrical damage may occur to the electronic components as a result of electrostatic discharges from the operator. Suitable precautions must be therefore be taken when handling these components.

Complete the connections, as follows:
- plug the telephone line into connector JP15;
- connect the lines for the devices in the installation to terminals JP11 & JP12 (line 1 to JP11 and line 2 to JP12) (RS485 serial interface)(*);
- connect the three relays to terminals JP3, JP5 and JP6;
- JP13 is the terminal for the RS232 serial interface, reserved for the service connections;
- JP14 is the terminal for the RS232 serial interface, used to connect a GSM/GPRS modem (optional);

  Use cables with a max. length of 30 m
- plug the network cable (for LAN connection) into the Ethernet connector JP22(**).
- connect the optional USB device to JP20 (***);
- finally connect the power cable to terminal JP10.

Warning

(*) ***RS485 line:***
- *observe the polarity (+.-,GND);*
- *the maximum length must not exceed 1000 m.*
- *do not make branches in the line or star connections;*
- *the most distant terminal must be fitted with a 120 Ohm ¼ W resistor (included with the product) between + and - ;*
- *avoid laying the line near power cables;*
- *use shielded cable and connect the shield to the GND pole only. CAREL recommends Belden cables code 8761.8762 or equivalent.*

(**) ***Ethernet:***
- *use shielded cable Cat.5e SFTP*

(***) ***USB:***
- *only use standard USB cable, less than 30 m long: to ensure correct operation of the USB connection, CAREL recommends cables no longer than 5 m; for longer cables, signal repeater devices should be used;*
- *Front USB: only use standard USB cable, less than 3 m long.*

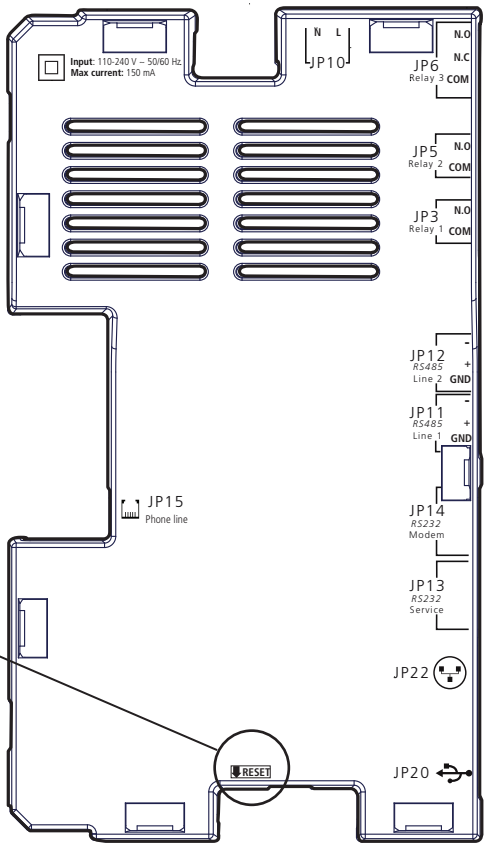
CAREL recommends the following wiring:
- ***in the right opening*** *the RS485 (JP11 and JP12), modem (JP14), Ethernet (JP22), USB (JP20) and telephone lines (JP15);*
- ***in the left opening*** *the power (JP10) and relay cables (JP3, JP5 and JP6).*

5. BOARD AND CONNECTIONS

Terminals and connections:

JP3	relay 1
JP5	relay 2
JP6	relay 3
JP15	telephone line
JP10	power supply
JP12	RS485 (field - line 2)
JP11	RS485 (field - line 1)
JP14	RS232 (optional GSM/GPRS modem)
JP13	RS232 (service)
JP22	Ethernet (LAN)
JP20	USB

Warning: *the RESET procedure is reserved for qualified personnel only*



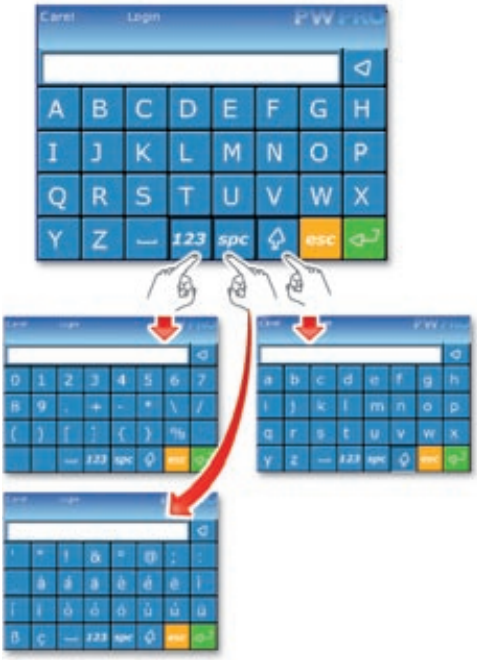
6. GRAPHIC INTERFACE

Display

One of the main features of PlantWatchPRO is the user interface. Web navigation also uses the same graphic interface, identical to the touchscreen except for some functions that can only be accessed directly from PlantWatchPRO using a USB memory key (these are highlighted in the text by).

Touchscreen keypad

The following keypad will be made available on the touchscreen display whenever data needs to be entered (letters, numbers or symbols):



To switch from the main keypad (upper case) to the other keypads, use the following buttons:

to shift to lower case

for the numeric keypad

for symbols and punctuation

Navigation buttons

	BACK button: used to return to the previous screen. If pressed on the home page, automatically returns to the login screen
	HOME button: returns to the home page
	SILENCE button: used to mute the alarm generated by the buzzer (or the additional siren, if installed)
	HELP button: pressing the Help button displays a brief explanation of the functions available in the current screen *To exit the Help screen, press*
	displays the list of the devices in the installation and the corresponding alarms. When a device generates an alarm, this button turns red ( ) until the alarm is acknowledged -PV-, cancelled -Canc.- or removed -Rem.- by the user (see chapter dedicated).
	restarts the system software, loading the changes made to the configuration; if the changes require the new configuration to be loaded, the button is red ( ) until it is pressed to make the changes active. The reload operation may take a few seconds. *To make the changes to the system configuration effective, the software needs to be reloaded (using* *), after having confirmed the changes*
	opens the window for setting the "Guardian" program; the notification channels specified will be used by the "Guardian" to send any PlantWatchPRO malfunction warnings to the specific technical personnel. This button, like the previous two, turns red ( ) when the program is activated
	CONFIRM button: confirms the changes made to the screen
	scrolls the list upwards
	scrolls the list downwards
	scrolls the list to the previous device
	scrolls the list to the next device
	used to access the key to the graph of the variables on the corresponding screen
	add
	remove *To remove an object (device, time band, action, …), first press* *and then select the object to remove*

Main menu

The PlantWatchPRO main menu features the clock, the navigation buttons, the information on the name of the site, and five icons: Installation, Configuration, Reports, Alarms/Events and Scheduler; pressing each of these accesses other secondary menus with the lists of corresponding functions.

7. START UP

Configuration wizard

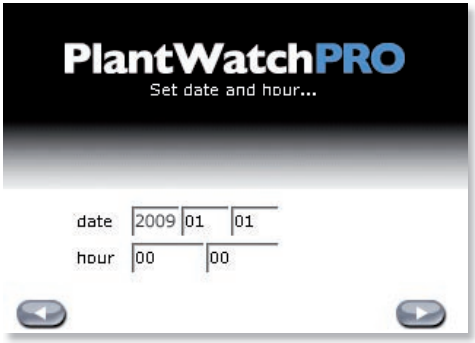
❶ When PlantWatchPRO is first started, the following presentation screen will be displayed

Pressing ▶ accesses the page for selecting the LANGUAGE and the TIMEZONE.

❷ Press the corresponding fields to select the desired items from the lists. The selection is confirmed by moving to the following screen (▶ button)

❸ Now enter the date and time by selecting the corresponding fields.

The date format is "yyyy/mm/dd" and the time format is "hh/mm".



❹ As the final phase in the program initialisation process, the previous selections need to be confirmed by pressing the END button or going back (with the ◀ button) and changing the settings.

⚠ ***Warning:*** *check the settings carefully before pressing END as once confirmed, the other languages and time zones can no longer be recovered.*

A confirmation message then notifies the user that the settings have been saved and, once the system has been rebooted, the PlantWatchPRO main menu will be accessed.

⚠ ***Warning:*** *the following default values are used when first logging in: USER: "Admin" PASSWORD empty; once having logged in, it is recommended to immediately change the Admin user password and keep it in a safe place: losing this information may compromise access to the system*

8. CONFIGURATION

Line configuration

Line 1 and Line 2

(these are the two lines that can be configured for the installation: choose "line 1" and then proceed in the same way for the second line, if used).

Devices

To add (+) (or where necessary remove (−)) devices to/from the installation, choose the type (from those available in the PlantWatchPRO archive), then assign a short custom description and assign the address (this must be different for each device on the same line, otherwise the program will display an error message); a group can also be assigned (up to 5 groups are available), used to apply specific rules and enable or disable the device according to special needs.

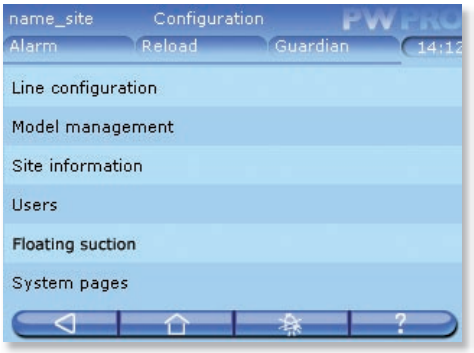
Disabling a device means that any alarms it generates will not be managed.

Device customisation

List of devices configured on the line; this is used to display the variables and if necessary change the description.

Connection

To set the protocol (CAREL-RS485 or Modbus®-RS485) and configure the serial port parameters.

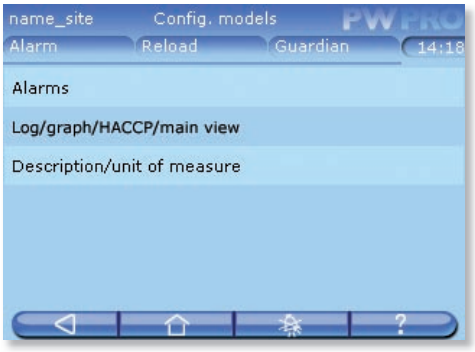


Model management

Model configuration

Used to configure the models corresponding to the instruments, that is:

- Alarms (priority and enable/disable);
- Log/graph/HACCP/main view;
- Description/unit of measure (custom description and unit of measure).



Export model

To export models .

Check that there is free space on the USB memory key.

Import model

The following models of devices can be imported:

- standard models (downloaded from http://ksa.carel.com);
- models exported from PlantWatchPRO;
- models created or modified using Device Creator.

To import a **standard model** (e.g.: *newstandardmodel*), download the .zip file from http://ksa.carel.com and unzip the file into the main directory of a USB pen drive. At the end of the procedure, make sure that the "\models\standard*newstandardmodel*\" path has been created on the USB pen drive.

To import a **model exported from PlantWatchPRO** (e.g.: *IR33*) make sure the .xml the file is placed on the USB pen drive in "\export*sitename*\models*IR33.xml*".
(sitename is the name of the site set on the Configuration -> Site information page in the PlantWatchPRO that the model was exported from; if the model is exported directly to the USB pen drive, the path is created automatically).

To import a **model created or modified using Device Creator** (e.g.: *mymodel.xml*) make sure the .xml the file is placed on the USB pen drive in "export\mydirectory\models*mymodel.xml*. (*mydirectory* can be any name).

Important: if the Device Creator version is lower than 3.0 the .xml file must be located in \models\dcreator*mymodel.xml*

Important: *if importing an existing model, some of the data will be overwritten.*

Copy model

Used to create new models based on an existing model, then making the desired changes.

Updating the model used as the basis for others also changes all the models derived using the copy function.

Remove model

To remove a model that is not used by the installation and thus free up part of the PlantWatchPRO memory.

Site information

This is used to enter the information relating to the site where PlantWatchPRO is installed, plus some information on technical service for support in the event of problems.

The text entered in the MAINTENANCE TECH. and TELEPHONE fields will be displayed when pressing the button from the login screen, so as to indicate who to contact in the event of need.

The PASSWORD IDENT and CONFIRM (password) fields must be completed if a password needs to be set for the connection to PlantWatchPRO Remote.

Users

Administrator

Used to modify the password for the administrator user.

Normal user

Used to create new users and assign them different privileges (site configuration/change parameters/ alarm management).

Remote service

Used to configure the user for remote service. For system security, the remote service user is normally disabled and should be only enabled when remote service is required.

Floating suction

Used to configure and activate the floating suction pressure control function.

Rack 1 (or 2)

Information

For details on the operating status and information on the showcases and compressor racks.

Configuration

To configure the compressor racks, set the connected showcases, the main parameters for the floating suction pressure control function algorithm and reset the algorithm calculation period for one or more showcases.

System pages

Reload configuration

This is the function that makes the changes made to the previous configuration effective.

No changes to the system will be active unless the Reload *button is pressed, which remains red (*Reload*) as a reminder, while the system is still in the previous configuration. Only after having confirmed the changes on the reload page will the system be updated.*

Backup/Restore

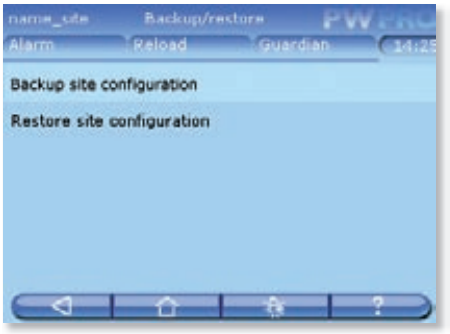
Backup site configuration

Once an installation has been configured, the configuration can be saved and exported and then used to configure another PlantWatchPRO.

Operation also available via web

Restore site configuration

Import the system configuration from a USB key .



Update software

To update the PlantWatchPRO software, see Chap. "13. Use of the USB memory key" .

Display/Clock

Control panel for the date/time and display settings.

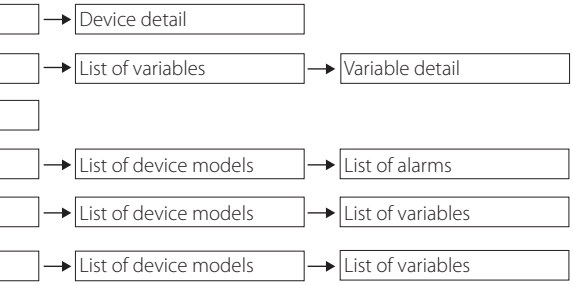
Network configuration

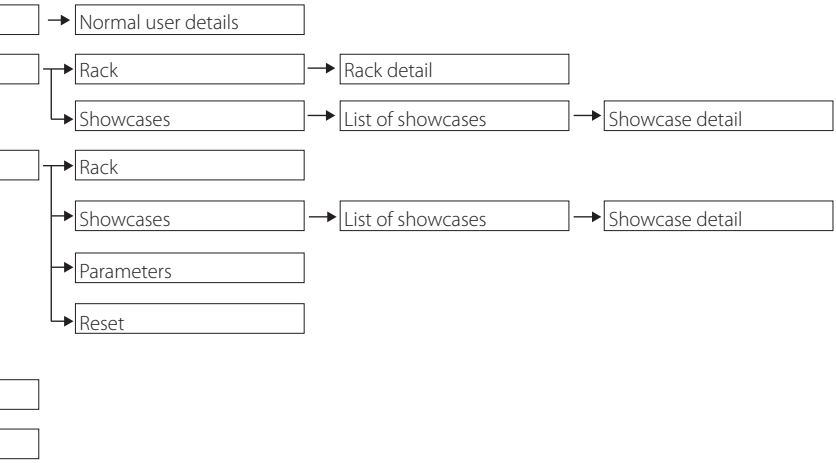
Configuration of the network settings for the local network (LAN) connection.

By default, the USE DHCP item is selected, which allows the system to detect the network settings automatically. The network settings should only be configured manually by qualified personnel.

Tree of the "Configuration" menu functions

- **Line config.**
  - Line 1/2
    - Device list
    - Device customisation
    - Connection
- **Model management**
  - Model configuration
    - Alarms
    - Log/graph/HACCP/main view
    - Description unit of measure
  - Import standard models
  - Export model
  - Import model
  - Copy model
  - Remove model
- **Site info**
- **Users**
  - Administrator
  - Remote user
  - Normal user
    - List of normal users
- **Floating Suction**
  - Rack 1/2
    - Information
    - Configuration
- **System pages**
  - Reload configuration.
  - Backup/restore
    - Backup site configuration
    - Restore site configuration
  - Update software
  - Display/ clock
  - Network configuration


Device detail
List of variables
Variable detail
List of device models
List of alarms
List of device models
List of variables
List of device models
List of variables

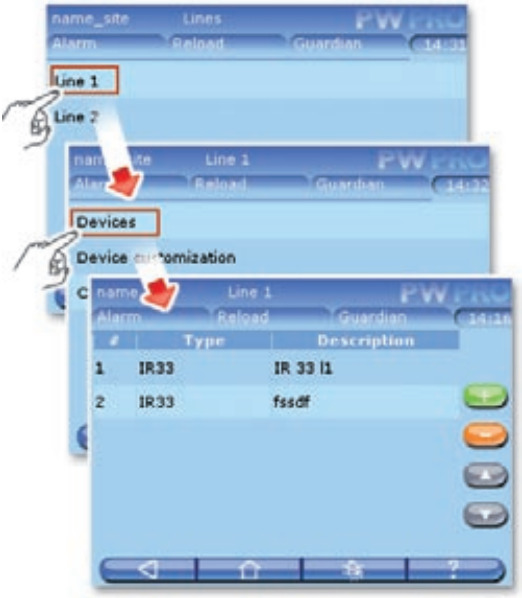

Normal user details
Rack
Rack detail
Showcases
List of showcases
Showcase detail
Rack
Showcases
List of showcases
Showcase detail
Parameters
Reset

How to configure a simple line

First of all, the user needs to configure PlantWatchPRO in relation to the devices in the specific installation.

1. From the home page, enter the menu CONFIGURATION → LINE CONFIGURATION → LINE 1 → DEVICES menu. Progressively add all the devices featured in the installation and connected to line 1, assigning a specific description, an address and if necessary add the device to a group (up to five groups are available) for applying one or more rules (see the part of the manual corresponding to the SCHEDULER menu).

   Each device on the same line must have a different address from the others, otherwise, if the same address is assigned twice, an error message will be displayed.

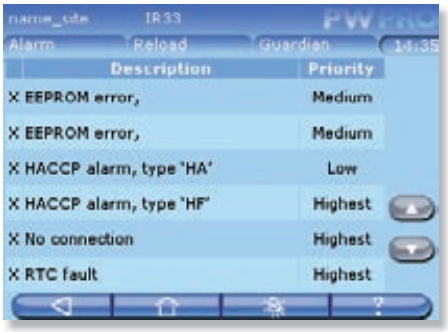


2. After having entered the devices, go back and press the LINE 1 → DEVICE CUSTOMISATION item. Here the name of each individual device and each related variable can be customised.

3. Go back and choose the type of CONNECTION, from the standard protocols proposed, the connection speed (BAUD RATE), the number of DATA BITS, the PARITY and the number of STOP BITS.

4. Repeat 1, 2 & 3 for LINE 2 (if used).

5 Entering MODEL MANAGEMENT → MODEL CONFIGURATION → ALARMS and choosing the devices on the two lines from the list one at a time, the alarms can be enabled or disabled and the priority set (the priority of an alarm will be indicated in the list with a different colour, depending on the level).



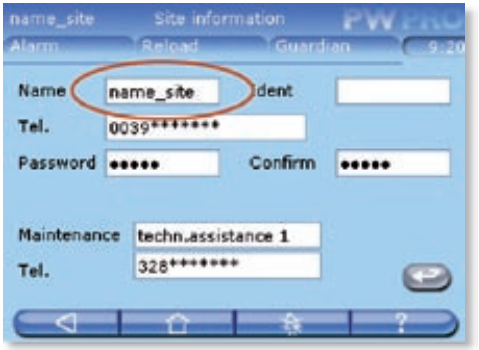
6 Then return to the previous menu and enter LOG/GRAPH/HACCP/MAIN VIEW → DEVICE DETAIL → VARIABLE DETAIL →; a screen will be displayed for selecting: the frequency for recording the value of the variable, the colour used to draw the curve showing the trend of this variable on the graph, and if required include the variable in the report and/or on the graph.

In the list of variables logged, the columns have the following meanings: Freq: sampling frequency. G: variable displayed on the graph. P: variable included in the HACCP report. M: variable included in the main list of devices in the installation (INSTALLATION menu).

The data recording period depends on the sample time, as shown in the table below:

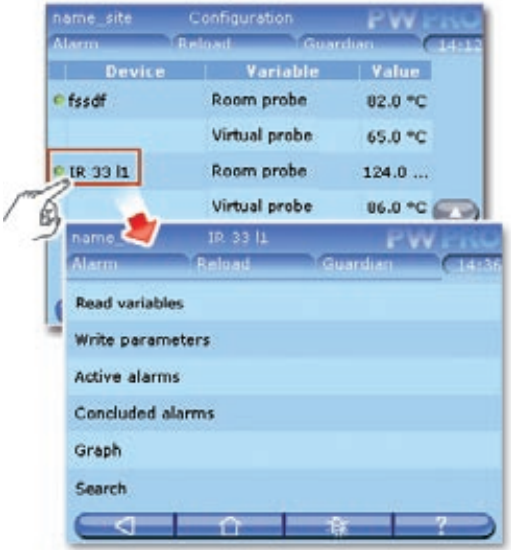
Sampling time	Recording period
30 s	13 days
1 min	26 days
3 min	80 days
5 min	133 days
15 min	400 days

❼ DESCRIPTION/UNIT OF MEASURE is used to change the name and unit of measure of the variables.



❽ Reload the configuration, using the Reload button and the dedicated screen.

The line is thus configured, and from the INSTALLATION menu all the settings defined thus far can be displayed under CONFIGURATION.

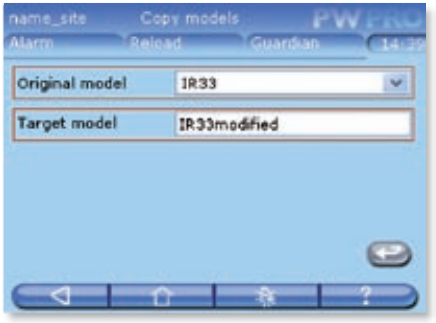


How to differentiate a device (or a group of devices) from the standard

An example of how to create another model of device with other features starting from the IR33

1. From the homepage, enter the CONFIGURATION → MODEL MANAGEMENT → COPY MODELS → menu, from the ORIGINAL MODEL list choose the standard model to start from (in the example, "IR33") and in the field TARGET MODEL field enter the name to be given to the new model (in the example, the new model has been called "IR33modificato")

   The model created is now identical to the one used as the starting point.



2. Return to the MODEL MANAGEMENT→ MODEL CONFIGURATION → menu to customise the new devices created, changing the settings relating to:
   - ALARMS;
   - LOG/GRAPH/REPORTS;
   - DESCRIPTION/UNIT OF MEASURE.

   A model can thus be created that is different from the one used as the starting point, based on specific needs.

   After having created the new model with different features from the standard IR33, these types of devices can be installed, following the first steps in the sequence of operations presented in the TUTORIAL on the configuration of a simple line.

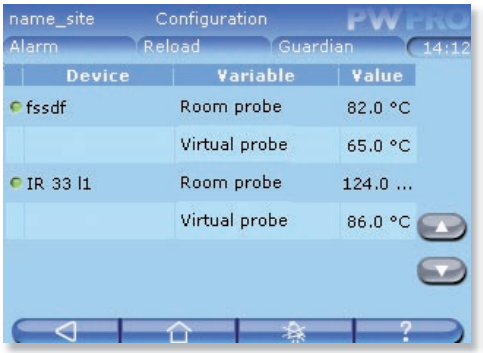
9. INSTALLATION

When entering this menu a list is displayed showing all the devices available in the installation and their status: the graphic LEDs next to the names of the devices have the following meanings:

- green - everything is working correctly.
- red - the device has an alarm.
- blue - device disabled.
- grey - device off-line.

In addition, the main variables previously selected to be displayed (from the CONFIGURATION → MODEL MANAGEMENT → CONFIGURATION MODELS → LOG/GRAPH/HACCP/MAIN VIEW → DEVICE DETAIL menu) are shown, or alternatively the default variables and the corresponding values.

Accessing the detail of each device, the alarms can be acknowledged (both concluded and active) and the graph of the trend of the variables displayed.



Read-only variables

Favourites

Displays the variables set as favourites.

All variables

Displays all the variables.

Write parameters

Favourites

Displays the parameters set as favourites.

All parameters

Displays all the parameters.

Group 1 – Alarm configuration

Displays the list of alarm configuration parameters.

Group 2 – Control

Displays the list of control parameters.

Group 3 - Control

Displays the list of system clock parameters.

Other groups

Group 4 – Device configuration

Displays the list of parameters relating to the configuration of the device in question.

Group 5 - Functions

Displays the list of parameters relating to the functions.

Active alarms

Goes to the list of active alarms (see Chapter 11 ALARMS/EVENTS).

Concluded alarms

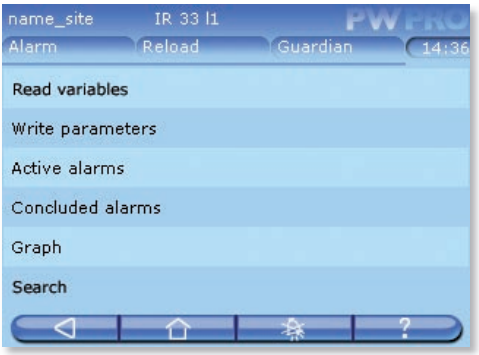
Goes to the list of concluded alarms (see Chapter 11 ALARMS/EVENTS).

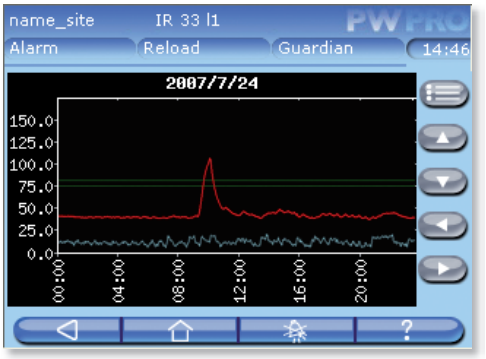
Graph

Graph of the variables. The horizontal axis shows the time scale, while the vertical axis shows the values of the variable. (The colours have been set previously by the user in the CONFIGURATION menu).

use the & buttons to scroll the time axis and the & buttons to move from one device to another.

PlantWatchPRO can plot up to five values at the same time.

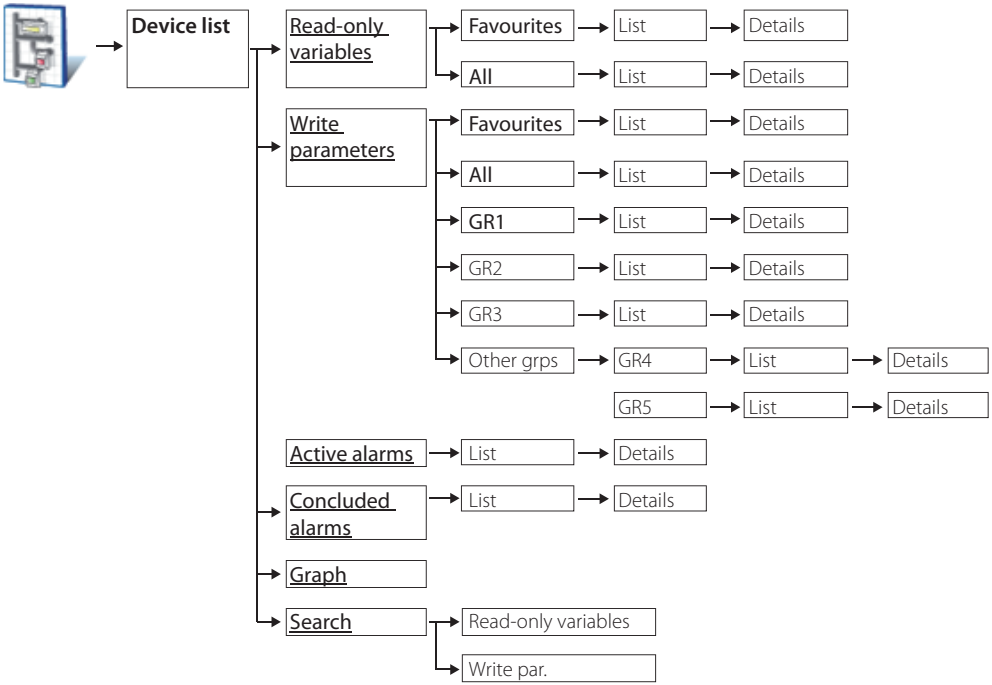




Search

To search for variables or parameters based on parts of the description or code.

Tree of the "Installation" menu functions

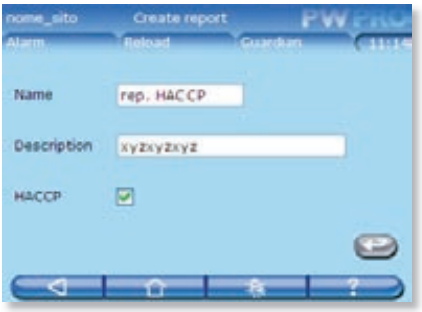


10. REPORTS

Configure report

Create report

Used to create a report, defining the name and description, the type (HACCP) and the list of the variables included.



If the report is defined as HACCP, it may only include the HACCP variables for the devices in the installation. The definition of the device HACCP variables can be customised under Model configuration.

Edit report

Edit description

To modify the description of the report.

Edit configuration

To modify the list of the variables in the report.

Copy report

To generate a new report starting from an existing report.

Delete report

To delete the report.

Export report

Export HACCP report

Used to enter the values of the parameters (starting date, report name, period and frequency) corresponding to the HACCP report to be downloaded.

Export log report

Used to enter the values of the parameters (starting date, report name and period) corresponding to the log report to be downloaded.

Print report

Print HACCP report

Used to enter the values of the parameters (starting date, report name, period and frequency) corresponding to the HACCP report to be printed.

Print log report

Used to enter the values of the parameters (starting date, report name and period) corresponding to the log report to be printed.

PlantWatchPRO is compatible with any USB printer that supports PostScript language.

Via web, PlantWatchPRO opens a dialogue box prompting for the directory used to save the HACCP report (".rtf" format, compatible with Microsoft® Word) or log report (".csv" format, compatible with Microsoft® Excel).

Display data log

Directly displays the values of the logged variables.

Tree of the "Reports" menu functions

- **Configure report**
  - Create report
  - Edit report
  - Copy report
  - Delete report → List of reports
- **Export report**
  - Export HACCP report
  - Export log report
- **Print report**
  - Print HACCP report
  - Print log report
- **Display data log**

11. ALARMS/EVENTS

Active alarms

Displays the active alarms on the system;
key to alarm colours:

- red - highest priority;
- orange - high priority;
- yellow - medium priority;
- white - low priority.

Concluded alarms

Shows the list of concluded alarms.

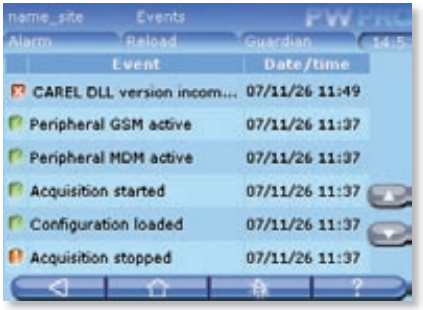
Events

List of the events saved by the system. The icons have the following meanings:

information event

error event

warning event



If the message in the EVENT column is too long to be displayed in full, to read it select the corresponding row and open the details

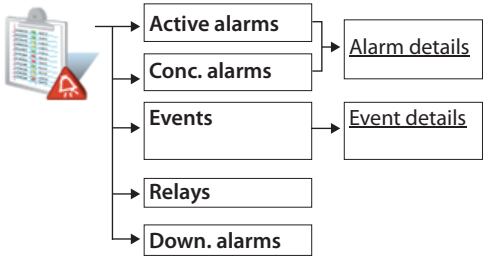
Relays

Used to disable the relays activated by PlantWatchPRO.
Pressing the corresponding fields and confirming ( ) disables the relays.

Download alarms

This saves the list of active alarms from a certain date onwards; the data is saved to a file in ".csv" format (compatible with Microsoft® Excel).

Tree of the "Alarms/events" menu functions"



How to respond to alarm signals from PlantWatchPRO

Below is a description of how alarms are shown on the PlantWatchPRO display and how to respond.

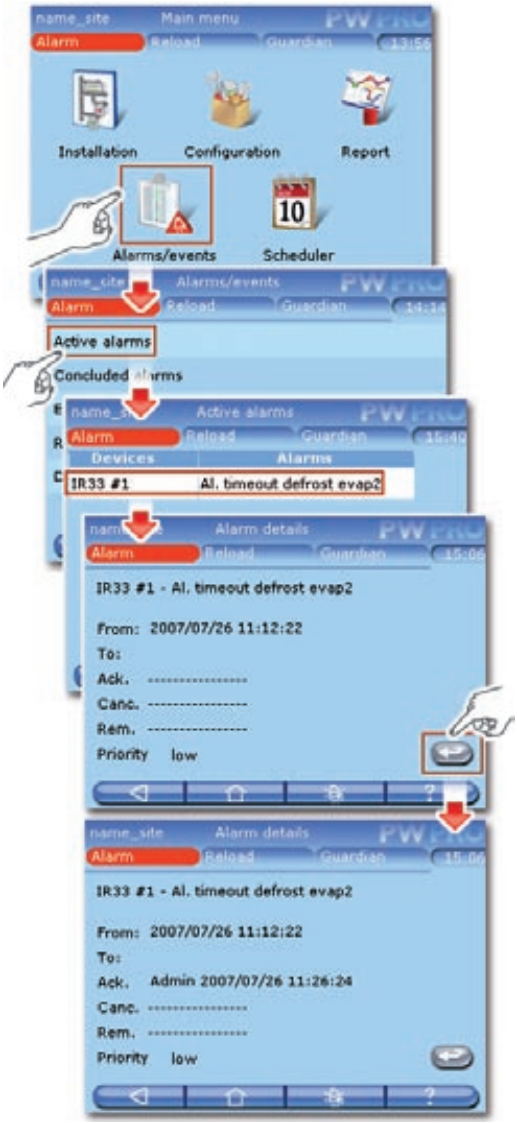
1. If the ALARM button turns red (Alarm) an alarm is active on one of the field devices.
   Enter ALARMS/EVENTS → ACTIVE ALARMS → to display the list of active alarms in the entire installation, highlighted in four different colours depending on the level of priority:
   - red - highest;
   - orange - high;
   - yellow - medium;
   - white - low.

   In the example, a low priority alarm called "Al. timeout defrost evap2" is activated on the device called "IR33 #1".

2. From the list of active alarms, pressing the row showing the alarm in question accesses the page with the details of the alarm. This highlights the date and the time when the alarm was activated, plus three fields (PV, CANC. and REM.) that are empty if the page is being accessed for the first time.

   Abbreviations:
   PV - PV - acknowledge alarm;
   Canc. - cancel alarm, that is, all the actions relating to the alarm are cancelled (e.g. send SMS, fax,…) before being undertaken by PlantWatchPRO;
   Rem. - remove alarm from the list of active alarms.

3. Pressing the button PlantWatchPRO records the user who performed the operation as the person acknowledging the alarm; in addition, the date and the time when the operation was performed are also recorded.



4. Pressing the button again records the time and date the alarm was cancelled and who performed the operation; this may be a different user from the one who previously acknowledged the alarm.

5. Pressing a third time records the identity of the user who removed the alarm on PlantWatchPRO.

6. Once the alarm has been removed, it no longer appears in the list of ACTIVE ALARMS, but rather can be seen in another screen with the list of CONCLUDED ALARMS.

   Once the alarm has been cancelled, the Alarm *button turns blue again.*

7. Pressing the row with the desired alarm again opens the detail screen, showing the date, time and name of the user who acknowledged, cancelled and removed the alarm.

12. SCHEDULER

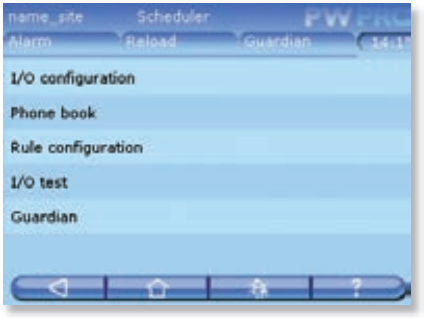
I/O configuration

This menu is used to configure the number of attempts at an alarm signal (if the previous was not successful) and the interval between the one attempt and the next at the following signals:

- fax;
- SMS;
- e-mail;
- PlantVisorPROremote.

As regards the e-mail addresses, the data relating to the server and the Dial-Up connection can be simply and intuitively configured on PlantWatchPRO.

In addition, the procedure and time for resetting the buzzer and the three relays can also be set.



Phone book

Up to five fax recipients, five SMS numbers, five e-mail addresses and one remote access connection can be configured.

Each recipient may have more than one number or address, separated by semi-colons (;),as in the most commonly used e-mail programs

What is a rule? *For each alarm or group of alarms (including from different devices), a series of rules can be defined, which may be:*

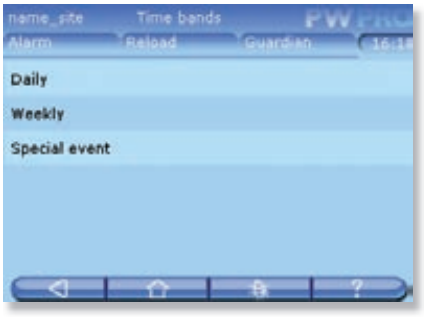
- *a set of actions (fax, SMS, e-mail, print, activate relay, buzzer, remote access);*
- *a time band;*
- *a delay.*

If an alarm goes off, the actions are performed. If a delay is set, the actions are performed after having waited the time set for the delay. If the time band is set, the actions are only performed if the alarm is activated within the time band.

Rule configuration

Time bands

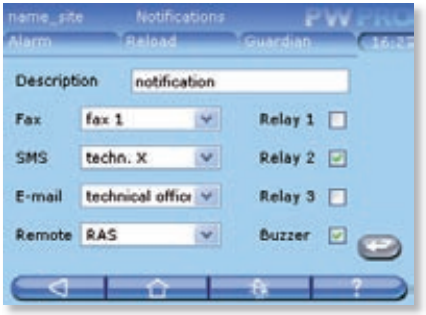
Used to enter time bands for implementing the rules; the DAILY/WEEKLY/SPECIAL EVENT submenu can be used to add or remove time bands of different durations that can be completely customised by the user.



Actions

Notifications

Configuration of the parameters for the notifications and the activation of the alarm channels.



Scheduled activities

List of the scheduled activities; the parameters controlling the various activities can be set, where necessary assigning them to a certain group of devices (set during the configuration procedure).

Reports

Used to create and set a new scheduled action that sends a report by e-mail and/or prints a hard copy.

Rules

Display the list of rules for notifying the alarms; rules can be added/removed or edited, pressing the detail of the rule to open the special menu for setting the configuration parameters.

For correct data entry, first create the time bands and the actions.

Scheduled rules

Display the list of scheduled rules; scheduled rules can be added/removed or edited, pressing the detail of the rule to open the special menu for setting the configuration parameters.

Sign of life: *this function can be used to enter a scheduled command that sends a sign of life (notification action) via one of the channels available*

I/O test

Test the correct operation of the Input/Output channels.

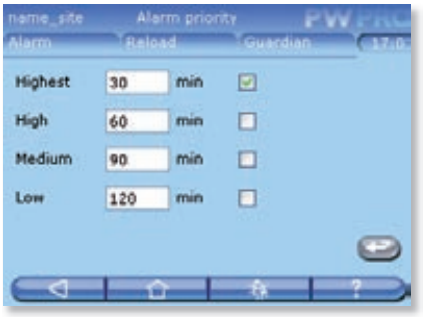
Guardian

Notifications

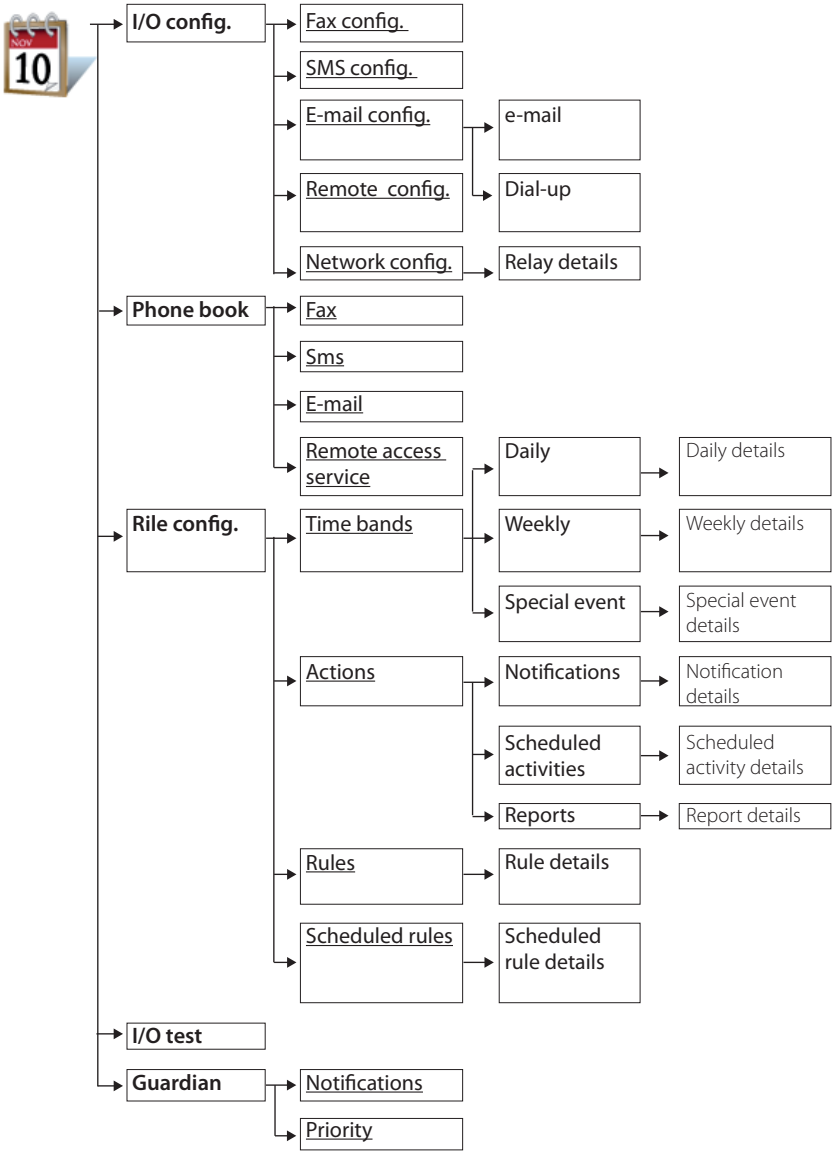
Configuration of the notification parameters for the "Guardian" program; the channels set are used by the "Guardian" to send notifications of any malfunctions on PlantWatchPRO to the technical personnel indicated.

Alarm priority

Used to configure the priority of the alarms, entering the settings in the respective fields.
If the type of the alarm is selected, the "Guardian" program checks that the alarm is managed within the maximum time specified in the field. If this is not the case, notification is sent via the channels configured in the NOTIFICATIONS menu.



Tree of the "Scheduler" menu functions



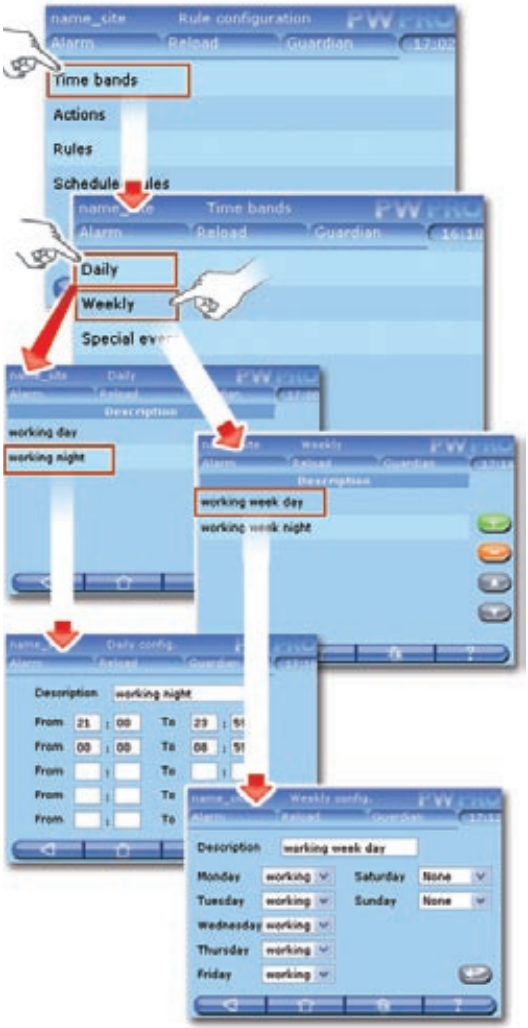
How to set scheduled rules

Below is a step-by-step description of how to turn off the lights at 20:00 each working day and turn them on again in the morning at 9:00.

1. From the home page, enter the SCHEDULER → RULE CONFIGURATION → TIME BANDS → DAILY → menu: enter the daily time bands for switching the light off or on; in the example two time bands have been created, called "working day" "(09:00-20:00)" and "working night""(20:01-08:59)".

   To set the night-time band "21:00-06:00", it must be divided into two bands: "21:00-23:59" and "00:00-06:00".

2. From the TIME BANDS → WEEKLY → menu: now create the weekly light On/Off time bands; in the example two bands have been created relating to day and night (day= lights on, night= lights off), called "working week day" and "working week night", entering first the daily time bands created previously on the days from Monday to Friday (premises considered closed Saturday & Sunday).



❸ Return to the RULE CONFIGURATION → ACTIONS → SCHEDULED ACTIVITIES → menu: enter the desired actions (on the entire installation or just on some devices, using the option for assigning the actions to the GROUPS). Two actions have been created, "lights ON" and "lights OFF", turning the lights on and off respectively

❹ Then go to RULE CONFIGURATION → SCHEDULED RULES → : enter the new scheduled rules, that is, one that acts in the time band when the lights should be on, activating the action that switches the lights on (this rule will be called "lights on (day)") together with another rule that switches the lights off, thus activating the "lights OFF" action (this rule has been called "lights off (night)".

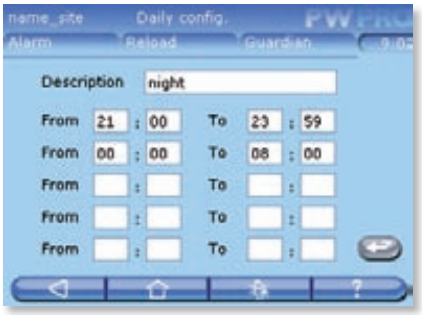
In four steps, a scheduled activity has been set that automatically switches the lights on and off; the same procedure can be used to create other rules acting on the installation (entire installation or just some devices.

How to set the rules

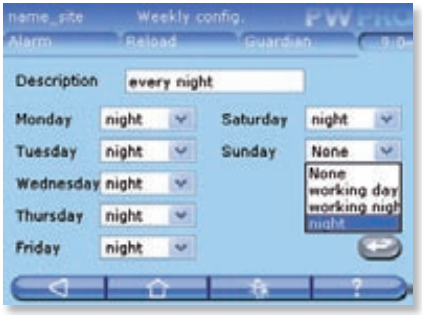
Below is a description of how to set PlantWatchPRO to notify a highest priority alarm activated in the night-time time band (21:00-08:00) via SMS.

1. From the home page, enter the SCHEDULER → RULE CONFIGURATION → TIME BANDS → DAILY → menu: create a time band that goes from 21:00 to 08:00; in the example this has been called "night".

   Remember that to set the night-time band "21:00-08:00" it must be divided into "21:00-23:59" "00:00-08:00".



2. Return to TIME BANDS → WEEKLY → : create a weekly time band in which the "night" daily band is applied every day of the week; this weekly time band has been called "every night".



3. Return to the RULE CONFIGURATION → ACTIONS → NOTIFICATIONS → menu: enter the notification action "send SMS", selecting from the SMS list the telephone number of "maintenance tech. X" to send the SMS to as the only notification channel.

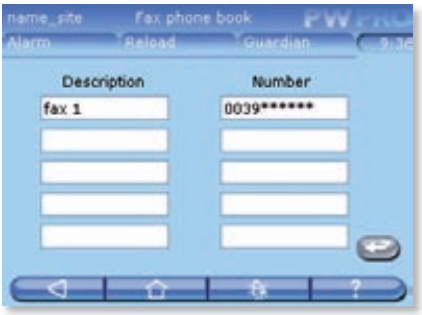
4. Return to the RULE CONFIGURATION → RULES → (+) menu: now create a rule (called "night SMS"), applying a DELAY of one minute (enter "1" in the corresponding field); from ALARM PRIORITY choose "Highest", from TIME BANDS, "every night" (band previously created in the corresponding menu) and finally, from ACTION "send SMS".

With these settings, as soon as a highest priority alarm is activated, on any night of the week, PlantWatchPRO waits one minute and, if within this time interval the alarm has not concluded, notification of a highest priority alarm will be sent via SMS to "maintenance tech. X".

How to configure the Guardian program

Below is a description of how to send a fax to a certain number if a highest priority alarm is activated on a field device.

1. From the home page, enter the SCHEDULER → PHONE BOOK → FAX → menu, and enter the fax number to send the notification to, with a short description



2. Return to the SCHEDULER and enter the GUARDIAN → NOTIFICATIONS → menu, choose the fax number set previously in the PHONE BOOK from the list.

3. Return to the GUARDIAN and enter the ALARM PRIORITY → menu, select the type of alarm to be managed using the Guardian program; in this case select "Highest", to have the alarms with the highest priority signalled via fax if the system does not manage them within 30 minutes ("30 min" is the time set by the user).

How to configure email

Below is a step-by-step description of how to configure the parameters to allow PlantWatchPRO to send email.

1. From the home page enter the SCHEDULER → I/O CONFIGURATION → E-MAIL CONFIGURATION → E-MAIL menu to access the parameter configuration screen

2. Under SENDER enter the e-mail address of the sender of the e-mail

3. The USER, PASSWORD and SMTP fields should be completed with the data supplied by the ISP.

   Warning: *the IP address, and not the URL, must be entered in the SMTP field. This configuration should be completed by qualified personnel (systems administrators)*

4. Then enter the NUMBER OF ATTEMPTS to be made and the delay between attempts (RETRY AFTER __ MINUTES field)

5. Under TYPE choose whether to access via LAN or via modem (Provider)

6. If accessing via modem (i.e. "Provider" has been chosen in the TYPE field), the Dial-Up also needs to be configured: From the home page enter theSCHEDULER → I/O CONFIGURATION → E-MAIL CONFIGURATION → DIAL-UP menu and enter the telephone NUMBER to connect to when sending e-mail, the USERNAME and PASSWORD.

   Warning: *the telephone NUMBER, USERNAME and PASSWORD used on the Dial-Up configuration page are supplied by the ISP*

7. After having completed these steps, make sure that the e-mail communication channel has been configured correctly, using the special function: from the home page go to SCHEDULER → I/O TEST and choose the desired e-mail CHANNEL (e-mail address previously entered in SCHEDULER → PHONE BOOK → E-MAIL

13. USE OF THE USB MEMORY KEY

PlantWatchPRO can transfer data to/from a USB memory key; specifically, some functions are not accessible via web, but only using PlantWatchPRO.

In fact, the user can download the logged values of the selected variables, the HACCP report, the configuration of the complete site, the changes made to various models (to be then exported to others sites for reuse) and the list of alarms activated in the installation.

The USB memory key can also be used to load new data to the PlantWatchPRO memory; this is useful, for example, for importing the configuration of a previously configured site, models created based on the default models or those available in the standard libraries, or those created using the special Device Creator (IDE package).

A USB memory key can also be used to install new updated versions of the PlantWatchPRO software.

The following functions are only accessible directly on PlantWatchPRO and only using the USB memory key (highlighted in the manual by):

- IMPORT MODEL;
- RESTORE SITE CONFIGURATION;
- UPDATE SOFTWARE.

Other functions that require the USB memory key, if using PlantWatchPRO, yet are also accessible via web, are:

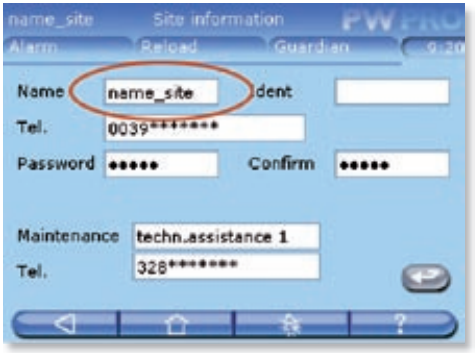
- EXPORT LOG REPORT;
- EXPORT HACCP REPORT;
- BACKUP SITE CONFIGURATION;
- EXPORT MODEL;
- DOWNLOAD ALARMS.

The table below shows a list of the functions that use the USB memory key to save data; the names of the directories (created automatically by the software) where the data are saved are listed (with the corresponding addresses), as well as the format the file is downloaded in.

Function	File path	File format
DOWNLOAD HACCP REPORT	G:\export\site_name\ report	.rtf
BACKUP SITE CONFIGURATION	G:\export\site_name\ config	---
DOWNLOAD ALARMS	G:\export\site_name\ alarms	.csv
EXPORT MODEL	G:\export\site_name\ models	.xml

The USB key must be formatted with the FAT32 file system.

"G:\" is the name that usually denotes the removable memory drive on the PC, in this case, the USB memory key;
"site_name" is the name that assigned to the directory where the files will be saved and is the name that the user has assigned to the site under CONFIGURATION → SITE INFORMATION.



How to download an HACCP report from PlantWatchPRO

Below is a description of the operations to be performed by the user to download a HACCP report from PlantWatchPRO using the USB memory key, and then transfer the data to a PC. For example, download the daily report, with the data shown every 30 minutes, relating to 19 July 2007.

1. From the home page, enter the REPORT → EXPORT REPORT → EXPORT HACCP REPORT menu.
2. As the START DATE enter the day the report should start, therefore "2007/07/19".
3. Select "1 day" as the PERIOD.
4. Choose "30 minutes" as the FREQUENCY (the other option for displaying the values of the HACCP variables is "12 hours").
5. Insert the USB pendrive in the port.
6. Finally press the button and the OK button on the Warning message that appears to start the data transfer from PlantWatchPRO to the memory key.

After a short while a message box is shown confirming the operation, or alternatively an error message if the memory key does not have enough space or has not been inserted correctly.

How to update the PlantWatchPRO software using a USB memory key

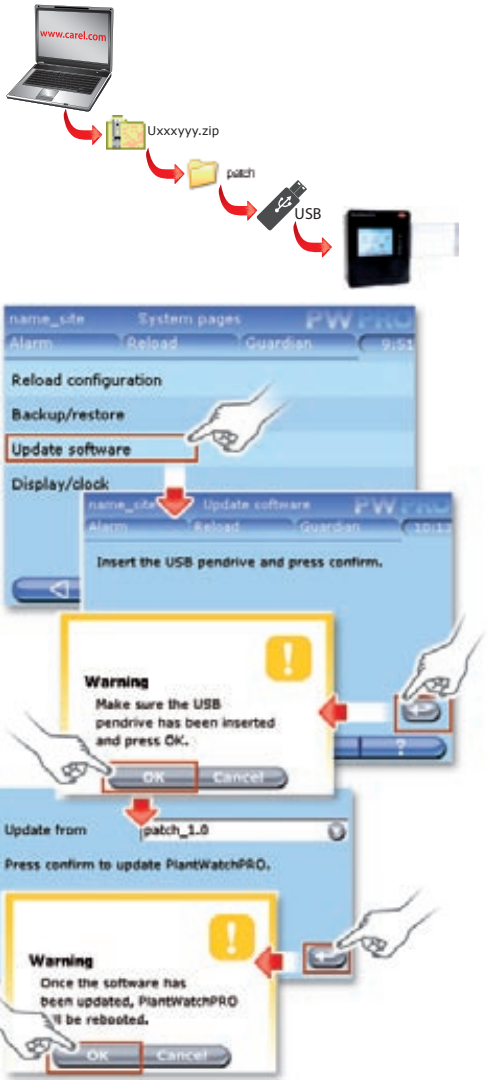
How to update the PlantWatchPRO software with new versions released by CAREL.

1. Check the software version currently installed.
2. Download the software update from the http://ksa.carel.com website to the PC
3. The file downloaded will be a compressed file such as "Uxxxyyy.zip".
4. Unzip the file to the USB memory key.
5. From the PlantWatchPRO home page access CONFIGURATION → SYSTEM PAGES → UPDATE SOFTWARE.
6. Insert the memory key and press the and the OK button on the Warning message that appears.
7. From the list that will be displayed on the new screen, select the "patch" directory as the source for updating the software version.
8. Press the button and the OK button on the Warning message that appears to start the software update operation..

After this operation, as highlighted by the Warning message, PlantWatchPRO will be rebooted to make the software update effective. This operation may take a few minutes.

Warning:

- *never remove the USB memory key until the software update has been completed and the system has been rebooted, as both PlantWatchPRO and the key may be seriously damaged;*
- *power must be available throughout the entire software update operation.*



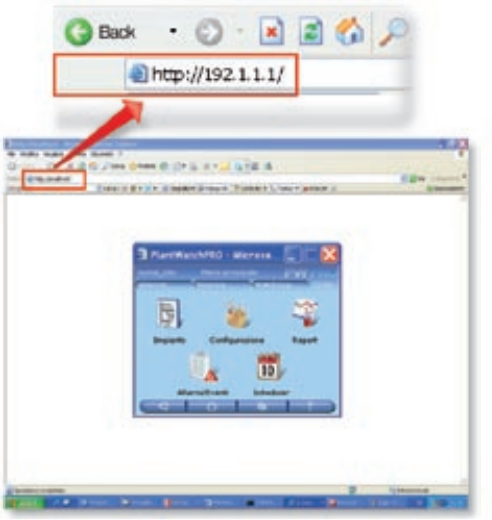
14. NAVIGATION VIA WEB FROM A REMOTE PC

PlantWatchPRO installed in any location can be monitored via an internet or telephone connection. This function can be used to display on the PC's screen the exact same data that appears on the PlantWatchPRO touchscreen display and access almost all the PlantWatchPRO functions.

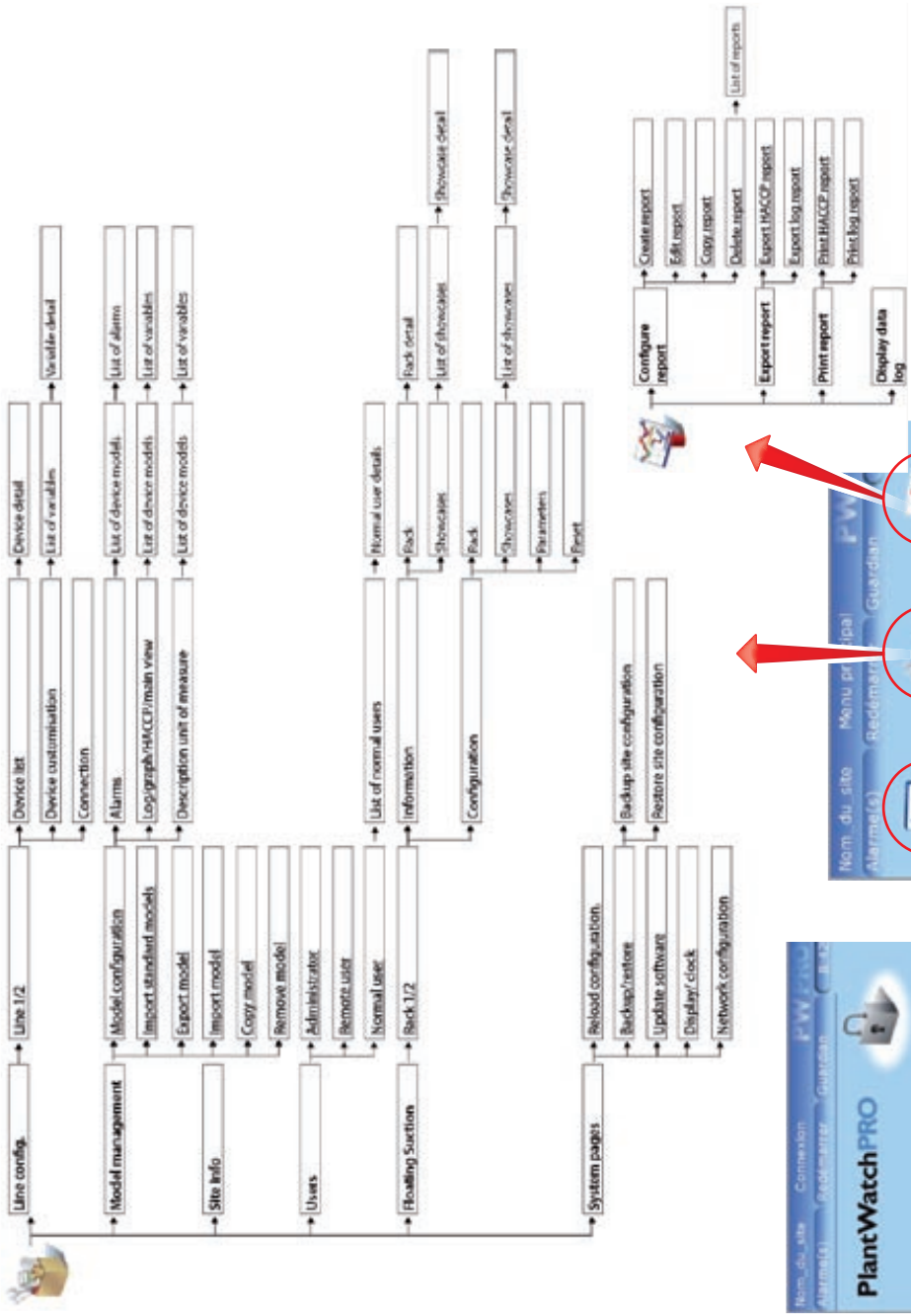
PlantWatchPRO from a remote PC via a telephone connection

Once the PC is running, in Microsoft Windows (any version), from the Control panel create a new Internet connection, as follows:

1. Access CONTROL PANEL → NETWORK AND INTERNET CONNECTIONS.
2. Then choose CREATE A NEW CONNECTION → CONNECT TO THE INTERNET → SET UP MY CONNECTION MANUALLY → CONNECT USING DIAL-UP MODEM.
3. Enter the name of the connection.
4. Enter the telephone number of the telephone line that PlantWatchPRO is connected to.
5. Choose from the options that allow the connection to be available to all users or only this specific user.
6. Enter "PVRemote" as the USER NAME and "PD35010" as the PASSWORD.
7. The connection has been created; now open a web browser - Windows Internet Explorer® - version 7 or higher with the zoom window function available) and enter following IP address: http://192.1.1.1 (if PlantWatchPRO is connected to the PSTN telephone system) or http://192.1.1.3 (if PlantWatchPRO is connected to the GSM telephone system).
8. The window of the browser will automatically show the PlantWatchPRO screen, allowing access in the same way as for the touchscreen version



15. FUNCTION TREE



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Active alarms
Conc. alarms
Events
Relays
Downld. alarms
Details of alarm
Details of event
I/O config.
Fax config.
SMS config.
e-mail config.
Remote config.
Relay config.
e-mail
Dial-up
Relay details
Phone book
Fax
Sms
E-mail
Remote access service
Rule config.
Time bands
Actions
Rules
Scheduled rules
Daily
Weekly
Special event
Notifications
Scheduled activities
Rule details
Scheduled rule details
Daily details
Weekly details
Special event details
Notification details
Scheduled activity details
I/O test
Guardian
Notifications
Priority
Device list
Read-only variables
Write parameters
Active alarms
Concluded alarms
Graph
Search
Favourites
All
GR1
GR2
GR3
Other grps
List
Details
GR4
GR5
Read-only variables
Write par.

16. TECHNICAL SPECIFICATIONS

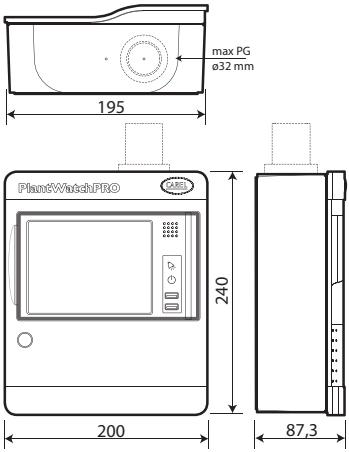
Power supply	110 to 240 V ~ 50/60 Hz
Power input	6.7 W (typ), 9 W (max)
Operating conditions	5T50 °C, 20 to 80 % rH
Storage conditions	-20T60 °C, 20 to 80 % rH
Index of protection	IP65
Display resolution	240 x 320 pixels
Type of LCD	5.7" TFT, (12 o'clock), 262144 colours
Other board functions	RTC, Watchdog (1000 ms), JTAG
Digital outputs	2 N.O. relays, 5 A 30 Vdc / 250 Vac,
	1 N.O. relays, 6 A 250 Vac,
Serial ports	2 RS232 serial ports on RJ45 connector
	2 RS485 serial ports, master, hd, opto-isolated, 19200 bps
	1 RS485 serial port, master, hd, opto-isolated, 19200 bps
Digital inputs	2 opto-isolated inputs at max. 300 baud
Backlighting	White LEDs
Buzzer	Max 80 dB at 10 cm
USB ports	2 standard HOST ports, type A connector, on front
	1 standard HOST port, type A connector, internal
Internal modem	Socket Modem, PSTN V.34/33.6K data rate
Internal battery (*)	Lithium model CR2032, 3V
Internal fuse (**)	F1 1.25 A
Electromagnetic compatibility	CEI EN 60950
	CEI EN 55022
	CEI EN 55024
Environmental pollution	Conforms to RoHS directive
Cover material	Transparent polycarbonate
Chassis material	Plastic

Warning:

- *(*) If necessary, replace exclusively with an identical or compatible type.*
  ***Danger of explosion if an incorrect type of battery is used.** Dispose of used batteries according to the instructions*
- *(**) Only replace with an identical or compatible type. **Even when the fuse blows some parts of the system are still live and may represent a danger during maintenance**.*
- *This is a class A product. In domestic environments it may cause radio frequency disturbance. In this event the user may need to adopt adequate measures;*
- *This equipment shall not be set up to make automatic calls to the Telecom Emergency Service;*
- *The call log incorporated in this equipment does not record all answered calls. The call log, therefore may not agree with the Telecom account which may include calls not shown on the log;*
- *Do not set more than ten call attempts to the same number within any 30 minute period;*
- *This equipment must not to be used in any circumstances which may constitute a nuisance to other Telecom Customers.*

Dimensions (mm)

wall-mounting



Note:

CAREL

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